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Physical Development and General Motor Performance of Bratislava University Students

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Abstract

In this contribution the authors have evaluated a sample of 606 university students (studying at 8 faculties from Bratislava universities, 344 males and 262 females) by measuring 3 somatic parameters (body height, body weight and BMI) and by submitting them to 6 general motor performance tests (sit and reach, standing broad jump, 30 seconds sit-ups, over head 2 kg medicine ball throw, 10 x 5 m shuttle run and endurance shuttle run). Differences were identified by parametric un-pair t-tests and they were considered on a **1 %, or a *5 % significance level. We have not found any significant differences in somatic parameters between single groups of males or females. The general motor performance tests have indicated higher performance levels among students at the Faculty of Physical Education and Sports for all tests applied, both for males and females. On the other hand, students from other faculties seldom showed any significant differences in their general motor performance levels. Comparison with Slovak population shows higher performance level of The students at the Faculty of Physical Education and Sports also showed higher performance levels when compared to the Slovak population in general, while students at other faculties did not do any better or even did slightly worse than the general population, according to the historical data we have used for our comparison.

Key words: somatic parameters, general motor performance, university students;

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1. Introduction

Nowadays people can be said to be living a hypokinetic life. The times we are living in bring along changes in life style mainly among the younger generation who, due to the achievements of modern technology, perform much fewer activities involving exercise than their parents used to. As a result, their fitness level has declined and they suffer increasingly from the so-called diseases of civilization. The most widespread disease among children is obesity. Lack of exercise has a negative influence not only on an individual's health, but also on his functional and psychological fitness. Therefore, exercise needs to play an increasingly important role in people's lives. The purpose of any recreational exercise is to improve health and prolong active life. Doing exercise in childhood and during young age is essential in order to turn exercise into a lifetime commitment.

University students make up a relatively numerous social group with specific features. Their ages range from 19 to 25. The first few years of young people's active life are critical for developing the habit of being involved in recreational activities. It is during this time that young people need to deal with several difficulties such as leaving the family home, starting a job, finding a partner, getting married, starting one's own family (Šimonek, 2007). However, many authors point out that university students do not seem prepared for all those difficulties, as their physical fitness level is poor (Pistlova, 2010). This is quite often caused by the absence of physical education classes at university, insufficient facilities, etc.

Many studies have shown that increasing the number of physical education classes to replace some other subjects does not have a negative impact on the quality of academic education; paradoxically, however, the quality of education does not improve when other academic subjects are added to the curriculum to replace physical education classes; more often than not this has a negative impact on the students' health (Trudeau and Shephard, 2008).

We now have sufficient evidence to prove that doing exercise is an extremely important factor for preserving one's health (as defined by the parameters of physical development and motor performance). A healthy individual can lead an independent life and can fully participate in social life. Many symptoms that used to be considered manifestations of the aging process are actually caused by the lack exercise (Šimonek, 2007).

2. Objectives

This contribution is meant to compare and evaluate the parameters of physical development and general motor performance of Bratislava university students enrolled in various faculties; one group was made up of students enrolled in the Faculty of Physical Education and Sports, who obviously perform a much higher volume of exercise due to their particular curriculum than students enrolled in other (non-PE and sport) faculties or than other population samples in Czechoslovakia – according to databases providing data for the period after 1999.

3. Material and methods

This research has involved randomly selected students of both sexes from several Bratislava faculties or universities studying various subjects (Table 1). The average age of the students in the sample was 20.73 years (20.85 for the male and 20.57 for the female students). Among the parameters for physical development, we have decided to measure body height (BH), body weight (BW) and body mass index (BMI). We have evaluated the level of motor performance by means of a set of 6 tests: sit and reach (SR), standing broad jump (SBJ), overhead medicine ball (2 kg) throw (MT), shuttle run 10 x 5 m (10 x 5), sit-ups in 30 s (SU), endurance shuttle run (ENDUR).

For the population samples we have used the measurements published by Moravec (1990) and Moravec, Kampmiller and Sedlacek (1996). For the evaluation of motor performance we used the basic statistical parameters: arithmetic mean (x), standard deviation (s), maximal value (max), minimal value (min), variation range (v_r). In order to identify

significant differences among groups we used parametrical un-pair t-tests for independent groups. Statistical significance was evaluated on a **1 %, or a *5 % level.

3. Results

Table 1. Total number of students included in the study

Faculties	Male	Female	Total
FSPORT	171	41	212
FMEDC	28	39	67
FCHEM	31	25	56
FMATH	36	41	77
FLAW	27	31	58
FNSCI	32	39	71
FECON	19	28	47
FPEDAG	-	18	18
	344	262	606

Legend: FSPORT – Faculty of Physical Education and Sport, FMEDC – Faculty of Medicine, FCHEM – Faculty of Chemical and Nutrition Technologies, FMATH – Faculty of Mathematics, Physics and Informatics, FLAW – Faculty of Law, FNSCI – Faculty of Natural Sciences, FECON – Faculties within the Economic University, FPEDAG – Pedagogical Faculty.

4.1. Level of physical development parameters

Table 2. Level of physical development parameters of the groups included in the study

		Males				Females		
N	variables	BH	BW	BMI	N	BH	BW	BMI
FSPORT	x	180.9	77.37	23.62	FSPORT	167.76	59.24	21.06
n = 171	s	6.87	8.86	2.2	n = 41	5.97	5.59	1.87
FMEDC	x	183.79	77.14	22.71	FMEDC	168.46	57.21	20.13
n = 28	s	5.8	14.29	3.13	n = 39	6.24	6.86	1.82
FCHEM	x	182.29	78.44	23.51	FCHEM	168.08	62.46	22.25
n = 31	s	8.74	14.54	3.38	n = 25	7.48	11.96	4.98
FMATH	x	182.39	73.69	22.14	FMATH	166.88	59.44	21.32
n = 36	s	5.56	10.96	2.93	n = 41	5.21	8.42	2.68
FLAW	x	180.48	76.02	23.29	FLAW	169.42	58.89	20.51
n = 27	s	6.29	10.45	2.52	n = 31	5.97	7.36	2.28
FNCSI	x	182.53	75.52	22.64	FNCSI	167.18	58.40	20.92
n = 32	s	7.33	12.04	3.17	n = 39	5.82	10.62	3.91
FECON	x	181.95	79.34	23.91	FECON	169.93	61.21	21.15
n = 19	s	5.86	11.67	2.94	n = 28	6.29	9.10	2.57
FPEDAG	x	-	-	-	FPEDAG	168.56	59.42	20.85
-	s	-	-	-	n = 18	5.18	8.02	2.04

Table 3. T-test differences between FSPORT and other faculties for physical development parameters

	Gender	BH	BW	BMI
FMEDC	Males n=28	2.11•	0.11	1.89
	Females n=39	0.51	1.46	2.27•
FCHEM	Males n=31	0.99	0.55	0.23
	Females n=25	0.19	1.48	1.37
FMATH	Males n=36	1.22	2.16•	3.46••
	Females n=41	0.70	0.12	0.49
FLAW	Males n=27	0.29	0.71	0.72
	Females n=31	1.17	0.23	1.13
FNCSI	Males n=32	1.22	1.01	2.14•
	Females n=39	0.43	0.49	0.21
FECON	Males n=19	0.64	0.89	0.52
	Females n=28	1.45	1.11	0.16
FPEDAG	Males n=0	-	-	-
	Females n=18	0.49	0.09	0.38

Legend: •p<0.05. ••p<0.01

Table 4 T-test differences between former population norms and other faculties (non sport faculties) for physical development parameters

	Gender	BH	BW	BMI
Other	Males	1.23	0.48	1.52
Faculties	Females	0.51	1.76	0.87

Legend: •p<0.05. ••p<0.01

4.2. Level of motor performance parameters

Table 5. Statistical parameters of male students' motor performance from selected faculties

male	variables	SR	SBJ	MT	10x5m	SU	ENDUR
FSPORT	x	31.88	243.68	1135.56	16.97	30.16	86.16
n=171	s	6.95	16.96	165.63	0.84	3.80	22.84
FMEDC	x	26.68	227.64	999.29	18.60	27.36	66.14
n=28	s	6.96	28.52	168.81	1.62	4.44	23.92
FCHEM	x	21.42	211.23	1000.81	18.82	24.06	57.29

n=31	s	7.15	24.97	195.47	2.30	4.77	19.47
FMATH	x	25.36	228.39	941.67	18.59	26.14	59.31
n=36	s	7.29	19.43	143.10	1.44	3.15	15.67
FLAW	x	23.89	224.98	1080.00	18.29	27.52	67.41
n=27	s	7.87	23.06	178.03	1.37	4.28	20.50
FNSCI	x	21.98	217.97	923.91	19.06	23.84	64.22
n=32	s	7.73	25.17	146.03	2.48	3.65	18.78
FECON	x	20.58	222.84	970.00	18.03	25.68	50.89
	s	5.92	25.50	148.51	1.26	3.65	22.25

Table 6. Statistical parameters of female student' motor performance from selected faculties

female	variables	SR	SBJ	MT	10x5m	SU	ENDUR
FSPORT	x	31.01	199.00	781.85	17.86	25.76	58.34
n=41	s	5.87	12.17	126.04	0.86	3.23	20.47
FMEDC	x	27.50	163.10	570.26	21.04	22.23	33.51
n=39	s	6.70	22.75	131.46	1.96	4.26	12.69
FCHEM	x	24.82	155.68	655.00	21.83	21.64	32.08
n=25	s	5.72	23.59	128.99	2.48	4.30	13.74
FMATH	x	28.57	158.56	581.46	21.87	21.10	33.44
n=41	s	6.89	20.72	105.13	1.28	3.92	10.58
FLAW	x	27.03	170.19	674.68	20.53	21.55	37.29
n=31	s	8.29	21.36	115.53	1.58	4.33	14.23
FNSCI	x	26.17	166.13	614.36	20.21	21.03	31.56
n=39	s	8.26	18.74	143.61	1.32	4.11	10.46
FECON	x	28.93	166.21	625.54	20.09	21.11	35.96
n=28	s	5.55	19.02	81.20	1.42	3.47	20.05
FPEDAG	x	25.97	162.50	613.33	20.50	22.22	33.06
n=18	s	6.90	13.50	64.90	1.04	3.42	10.94

Table 7. T-test differences between FSPORT and other faculties in the level of motor performance parameters

	Gender	SR	SBJ	MT	10x5m	SU	ENDUR
FMEDC	Males	3.66••	4.14••	4.02••	8.11••	3.53••	4.27••
	Females	2.49•	8.86••	7.35••	9.49••	4.18••	6.48••
FCHEM	Males	7.67••	9.04••	4.05••	8.00••	7.88••	6.61••
	Females	4.19••	9.83••	3.93••	9.40••	4.42••	5.67••
FMATH	Males	5.07••	4.78••	6.52••	9.12••	5.93••	6.72••

FLAW	Females	1.72	10.77••	7.81••	16.62••	5.86••	6.91••
	Males	5.44••	5.04••	1.60	6.85••	3.30••	4.01••
FNCSI	Females	2.38•	7.23••	3.70••	9.16••	4.72••	4.89••
	Males	7.25••	7.22••	6.75••	8.72••	8.68••	5.11••
FECON	Females	3.03••	9.35••	5.55••	9.46••	5.74••	7.30••
	Males	6.81••	4.79••	4.17••	4.92••	4.88••	6.40••
FPEDAG	Females	1.48	8.73••	5.78••	8.10••	5.69••	4.49••
	Males	-	-	-	-	-	-
	Females	2.87••	10.26••	5.35••	10.21••	3.80••	4.92••

Legend: •p<0.05. ••p<0.01

Table 8. T-test differences between former population norms and FSPORT and other faculties (non sport faculties) in the level of motor performance parameters

	Gender	SR	SBJ	MT	10x5m	SU	ENDUR
FSPORT	Males	4.16••	7.24••	10.45••	9.31••	11.23••	12.72••
	Females	2.61•	8.86••	7.35••	9.93••	9.83••	9.86••
OTHER FACULT.	Males	0.71	1.06	0.35	0.45	1.28	4.53••
	Females	1.02	1.83•	1.99•	2.10•	2.42•	6.67••

Legend: •p<0.05. ••p<0.01

4. Discussion

Our data have revealed in most cases no significant differences between FSPORT and other faculties or the general Slovak population as far as the physical development parameters (BH, BW and BMI) were concerned (Tables 2, 3 and 4). However, we think that FSPORT students (both males and females) showed a much better fat to muscle ratio than students at other faculties and the general population. This is indirectly confirmed by the significantly better results they have scored in the general motor performance tests. Many authors have confirmed the decreasing level of motor performance among university students, which sometimes declines even as compared to the level measured when they started university. One of the reasons for that decline may be the number and content of PE classes. Tables 5 and 6 contain data for the general motor performance levels of both male and female students. The data in both tables clearly indicate that the students from the Faculty of Physical Education and Sport have achieved better levels of motor performance in all tests both for male and female students. This difference was in most cases (with the exception of 2) of a 1% statistical significance level (Table 7). We have obtained practically the same results when we compared the students at the Faculty of Physical Education and Sport with the general population. Other faculties have achieved practically comparable levels of motor performance for both male and female students and in most tests. The comparison with population data has revealed that male students in non-PE faculties generally score only slightly better or slightly worse in 5 tests (SR, SBJ, MT, 10 x 5, SU). It is only in the ENDUR test that male students score significantly worse than the general population. The groups of female students generally scored worse in all tests, particularly in the ENDUR test (Table 8). We can therefore draw the conclusion that at present university students, both male and female, have poorer performance levels particularly as far as endurance is concerned. Female students, however, achieve

lower performance levels in other tests as well. Male students maintain their general motor performance at levels comparable to the historical data about the general population.

5. Conclusion

Our research has shown that there are no significant differences between various groups of university students, or between university students and the general population as far as their physical development parameters are concerned. The study has confirmed, as expected, higher levels of general motor performance for the students from the Faculty of Physical Education and Sport in all tests. Students at other faculties have achieved much lower levels of general motor performance, with almost no significant differences to set them apart from one another.

The comparison with historical population data has confirmed that at present both male and female university students perform worse as far as endurance is concerned. Female students also score worse for other motor abilities, while males generally show similar performance level with the population at large, according to the historical data used.

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